A NEW SPECIES OF FROG OF THE HYLID GENUS *NYCTIMYSTES* FROM THE HIGHLANDS OF NEW GUINEA

by Michael J. Tyler*

[Read 12 October 1967]

SUMMARY

A new species of *Nyctimystes* is described. The maximum recorded snout to vent length of males is more than 80 mm, and the species shows distinct affinities with *N. humeralis* (Boulenger). However, it lacks the characteristic humeral spine exhibited by males of that species, and is also distinguished by its undivided nuptial pad and by differences in colouration.

INTRODUCTION

In 1963 and 1964 Mr. Barry Craig donated to the South Australian Museum several large collections of frogs obtained in the vicinity of Telefomen in the Western Highlands of New Guinea. Amongst the specimens were eleven representatives of an undescribed species of the hylid genus *Nyctimystes*. In 1965 Mr. Craig was a member of the Australian Star Mountains Expedition and obtained 650 frogs in an area approximately 40 miles west of Telefomen. Included in the collection were four additional specimens of the same species.

The methods of measurement employed in the description of the new species conform to those used by Tyler (1963).

Nyctimystes zweifeli new species

Holotype: South Australian Museum R.5426. An adult male collected at Telefomen, Western Highlands, New Guinea, on November 24th, 1963, by B. Craig.

Definition: A particularly large species of *Nyctimystes* in which males have a snout to vent length of up to 83 mm. The hindlegs are very long with a tibia length to snout to vent length ratio (TL/S-V) of ·588-·654. The veins of the palpebral venation are largely vertical in their orientation with a tendency to form a reticulum.

Description of Holotype: The vomerine teeth are in two roughly oval and prominently raised series between the oval choanae. The tongue is less than half as wide as the mouth, oval in shape and with a very slight posterior indentation. The head is broader than long (head length 26·8 mm, head width 29·4 mm). The snout is bluntly rounded when viewed from above and strongly rounded in profile. The canthus rostralis is slightly curved and the loreal region oblique. The nostrils are inconspicuous and separated from one another by a distance which is slightly less than the distance between the naris and the eye (eye to naris distance 7·2 mm, internarial span 7·0 mm). The eye is relatively small and not prominent, its diameter (7·8 mm) only slightly greater than

* South Australian Museum, North Terrace, Adelaide, South Australia.

the eye to naris distance. The pupil is completely dilated. The palpebral venation forms a dense pattern of predominantly vertical lines. The tympanum is small (diameter 3·7 mm) with only the inferior portion of its annulus visible.

The distance from the snout to the vent is 75·9 mm.

The fingers are long with large terminal discs, broad lateral flanges and flattened subarticular tubercles (Fig. 1a). The webbing between the third and fourth fingers reaches the base of the subarticular tubercle beneath the penultimate phalanx on the third, and midway up this tubercle on the fourth. Fingers in decreasing order of length, 3, 4, 2, 1. The discs of the second, third and fourth fingers are larger than the tympanum.

The toes are almost fully webbed, the webbing reaching the discs of all toes except the fourth where it extends as far as the subarticular tubercle at the base of the penultimate phalanx, and continues to the disc as a broad lateral flange (Fig. 1b). The toe discs are only slightly smaller than the finger discs, and all are larger than the diameter of the tympanum. There is a small kidney-shaped inner but no outer metatarsal tubercle. The legs are extremely long; the tibia length is 47·4 mm and the tibia length to snout to vent length ratio (TL/S-V) is 0·625. When the hindleg is adpressed the heel reaches well beyond the tip of the snout; when the hindlegs are laid along the side of the body the knee and elbow overlap considerably; when the hindlegs are bent at right angles to the axis of the body the heels overlap slightly.

The skin covering the dorsal surfaces of the head, body and limbs is smooth. The lateral surfaces of the body are slightly granular, the throat and chest finely granular and the abdomen and undersurface of the thighs coarsely granular. There is an extremely prominent supratympanic fold, a sharp fold on the posterior surface of the forearm, and a less conspicuous tarsal fold.

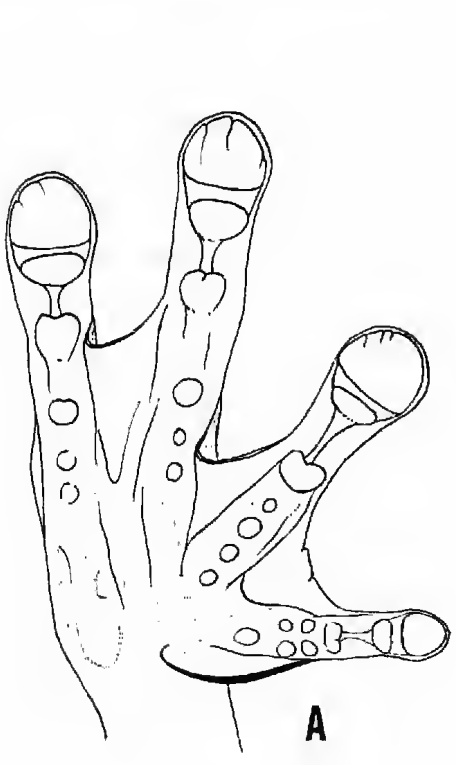
The dorsal surfaces of the head, body, forearms and tibia are a very dark plum colour with a hint of a crimson suffusion on the dorso-lateral portion of the body. On the thighs the plum occupies the median portion whilst the anterior and posterior surfaces are white, heavily suffused with large, irregular spots of plum. The sides of the body, the tarsus and foot are similarly marked. The abdomen is cream and the remainder of the ventral surfaces grey with obscure brownish mottling.

There is a sub-gular vocal sac with paired openings in the floor of the mouth near the angles of the jaws, and an extremely large, black nuptial pad at the base of the first finger.

Variation: There are eight paratypes: South Australian Museum R.8812-8819 collected at the type locality during the period November 14th-18th, 1963, by B. Craig. All specimens are males (six adults and two juveniles). Six additional male specimens from other localities are clearly representatives of *N. zweifeli*: South Australian Museum R.5275, 8811, Okfekaman, approximately 10 miles west-north-west of Telefomen; R.6476, 6499, Kawolabib (141°05′ long., 5°08′ lat.), approximately 10 miles south-east of Capella, Star Mountains; R.6477, Begibajen near Kawolabib and R.6478, Tabek Creek, Kawolabib. The complete range of altitude of these localities is 4,700-5,500 ft.

The range of snout to vent length of the adult males is 60·8-83·4 mm, but the smallest specimen with a nuptial pad (R.8815) measures 73·6 mm.

There is very little variation in the proportions of the complete series. In one specimen the internarial span is equal to the eye to naris distance, and in the remainder slightly less than it, the eye to naris to internarial span ratio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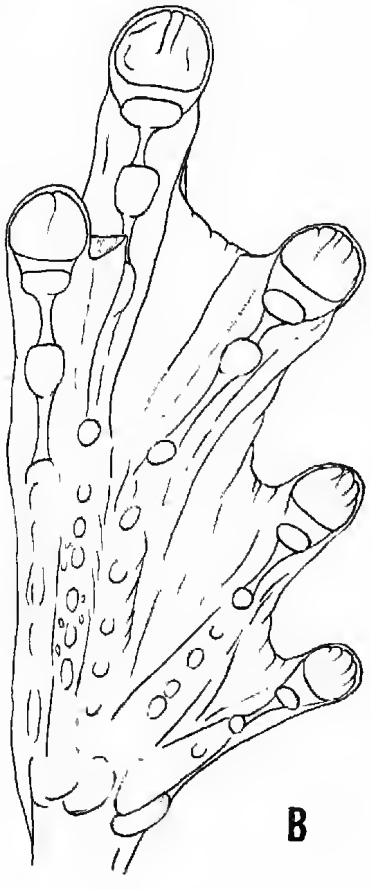
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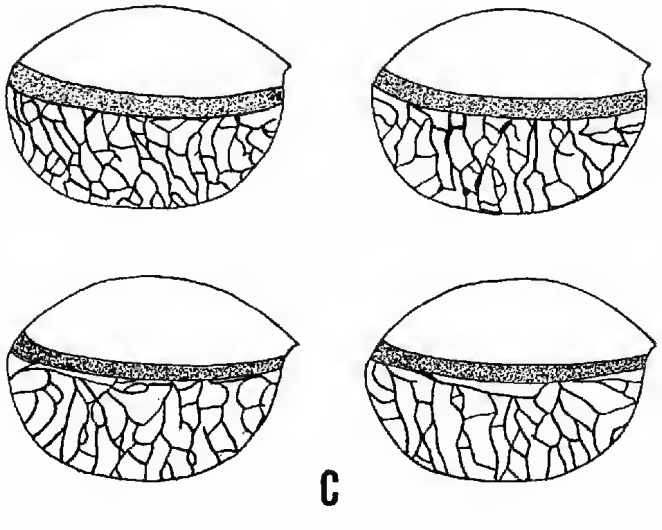
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(E-N/IN) being 1·000-1·121 with a mean of 1·063. This is an exceptionally long-legged species, for the TL/S-V range is ·588-·654, with a mean of ·625.

The supratympanic fold is conspicuous in all specimens, whilst the fold of skin on the posterior surface of the forearm of two shows a tendency to form tubercles. In the remainder it is a continuous fold as found in the holotype. Finger webbing and the palpebral venation are features in which there is scant variation. (Four examples of the palpebral venation are depicted in Fig. 1c.)

The dorsal colouration varies from a very dark plum to pale violet. In the darkest specimens patches of dark slate are visible. In a few specimens there are a few tiny, brilliant white rings scattered on the dorsal surface. Markings on the thighs appear to increase in intensity with age. In the largest specimens the pale background of the anterior and posterior surfaces is almost completely obscured by irregular patches of plum and slate. There appears to be a similar correlation with markings on the ventral surface of the body, for in juveniles and small males it is an immaculate pale cream. In three specimens there are no islands of pigmentation on the lateral body surfaces or on the anterior and posterior surfaces of the thighs.

The size and number of the spines which make up the nuptial pad vary with the size of the individual. In the largest males the spines are larger and less numerous than in the smaller specimens.

Comparison with Other Species: The large size of *zweifeli* clearly distinguishes it from all species except *granti*, *humeralis*, *kubori*, *montana*, *narinosa*, *papua*, *perimetri* and *pulchra*. (The species referred to here as *N. montana* is *montana* (Peters and Doria) and not the species described by Parker, 1936, for which the substitute name *cheesmani* was proposed by Tyler, 1965.)

The only specimen of *granti* reported in the literature is the holotype female with a length of 100 mm. A female specimen from Antares (Rijksmuseum Van Natuurlijke Historie, Leiden, No. 12110) approximately 250 miles east of the type locality has been examined by the writer. It is a female with a snout to vent length of 70 mm; it agrees with the original description of Boulenger (1914) and perfectly reproduces the striking vermiculated pattern of the dorsal surface seen in the illustration accompanying it. From a comparison of this specimen with *zweifeli*, *granti* may be distinguished by its shorter legs (TL/S-V ·557), more widely spaced nares (E-N/IN ·790), less extensive finger webbing (not reaching the subarticular tubercle at the base of the penultimate phalanx of the fourth finger), and by its entirely different dorsal colouration.

The largest male *kubori* reported in the literature had a snout to vent length of 53 mm which is less than that of the smallest *zweifeli* (60·8 mm). Furthermore, the possession of a definitely reticulate and more heavily pigmented palpebral venation, and shorter limbs (TL/S-V 0·51-0·57, vide Zweifel, 1958) enable *kubori* to be readily distinguished from *zweifeli*.

In *montana* the eye to naris distance is considerably greater than the internarial span (only slightly less than the internarial span in *zweifeli*), the finger webbing is slightly more extensive and the palpebral venation is composed solely of vertical lines. *Nyctimystes narinosa* has an internarial span exceeding the eye to naris distance and only basally webbed fingers. In *papua* the legs are shorter than those of *zweifeli* (TL/S-V 0·51-0·58), the fingers are less extensively webbed and the palpebral venation is broken up into isolated segments.

Nyctimystes perimetri has a high E-N/IN ratio (1·20-1·39 compared with 1·00-1·12 in *zweifeli*) and short legs (TL/S-V 0·50-0·56), whilst *pulchra* possesses a slightly crenate ridge on the forearm and tarsus and a long heel lappet (*zweifeli* lacks these dermal appendages).

Nyctimystes humeralis has a similar size and similar proportions to those of *zweifeli* and shares in preservative a violet dorsal colouration. The former is distinguished in being immaculate and in the sexual characteristics of male specimens. Male *humeralis* possess the unique humeral spine and there are two separate nuptial pads at the base of the first finger. Male *zweifeli* lack a humeral spine and the nuptial pad is undivided.

Colloquial Nomenclature: All of the specimens from Telefomen and Okfekaman were referred to as "Itul".

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